

TITLE: BILLIARD BALL RACK

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention is directed to billiards, defined herein as any of several games played with hard balls that are driven with a cue on a cloth-covered table enclosed by a cushioned rim. Specifically, the present invention is directed to a device for setting and arranging the balls on the surface of the billiard
10 table for play.

2. Description of the Prior Art

 In playing the game of pocket billiards, the balls are initially arranged on the surface of the billiards table via a frame. For the game commonly known as eight-ball, fifteen balls
15 are placed within a frame having an equilateral triangular configuration. The frame is moved on the table until the balls are in a desired spot, and once this has been achieved, the frame is removed, leaving the balls on the table in a specific formation or "rack". To initiate play, a player propels the cue ball toward the
20 rack, with the desired result of separating the balls such that the balls are moved to various locations on the table surface.

 As a player's skill increases, the initial break up of the rack may become an opportunity for moving individual balls into definite locations on the table. The ability for such precise
25 performance is dependent on the force and angle of the cue ball's contact with the rack. In order for the player to have consistent control, it is necessary that the balls in the rack be as close

together as possible, preferably in touching relationship.

To make the initial placement of the balls within the frame easier, the frame is usually larger than the total size of the balls placed in formation. The extra room in the frame allows the balls to be easily inserted and allows the frame to be removed with only limited contact with the balls in the rack. As the extra room in the frame does not place the balls in their optimum proximity, the player's fingers are often used to tighten the formation, either by inserting the player's fingers into the frame between the frame and the balls or, if the frame is flexible, by squeezing the frame.

One problem with using a simple frame arises when players use their fingers to tighten the ball formation by touching the balls directly. When there is contact between skin and the ball formation, such contact rarely separates without a certain amount of adhesion. This adhesion has a tendency to separate the balls in the formation, preventing a tight formation from occurring. The dirtier the player's hands, the greater the adhesion factor becomes. In general, it is desired that the player not touch the balls in the formation.

Another problem which has arisen in the use of the existing frames occurs when the frame is removed from the ball formation. Until the frame has been completely removed from the formation, there exists the possibility that the player, in lifting the frame, may move the frame such that there is unplanned and undesired contact with one or more balls. Examples of such unplanned contact would occur when the player lifts the frame unevenly and one or

more balls are dislodged from the tight formation created within the frame. Such contact loosens the formation, sometimes to the extent that the frame must be replaced down on the table to rack the balls again.

5 Various types of billiard ball rack devices have earlier been disclosed for producing acceptable rack formations.

 U.S. Patent 4,903,965 to Smith concerns a pool rack comprised of an equilateral triangular-shaped frame having a rear wall located directly opposite the apex formed by the other two walls,
10 and equipped with a push bar interactive with rearwardly biased leaf springs. The push bar is adapted to be manually forced horizontally toward the apex to achieve compaction of the array of pool balls embraced by the frame.

 U.S. Patent 3,992,005 to Richey discloses a billiard ball rack
15 comprised of three arms interconnected in a triangular shape by spring-biased rotating hinges at two of the angles and a ball and socket joint at the third angle. The concerted effort of the arms is to exert a squeezing effect on the confined balls.

 U.S. Patent 5,556,341 to Bonn discloses a billiard rack
20 wherein the embraced balls are compressed toward the center of the rack simultaneously from all sides of the rack. Said compression is achieved by retractable, downwardly angled packing bars in each side of the rack and adapted to be manually urged in a horizontal path toward contact with the balls.

25 U.S. Patent 5,601,495 to Silverman concerns a billiards ball rack wherein interior side walls of the triangular frame are downwardly angled so as to urge the balls into a compact formation.

Said side walls are adapted to move in a vertical path with manually applied downward force against the urging of upwardly biased springs.

U.S. Patent 6,312,342 to Newsome discloses a billiard ball rack that incorporates in its rearwardmost side outwardly and angularly extending lever portions that permit upward rotation of the billiard rack upon application of downward pressure prior to removal of the billiard rack from about the balls in the racking operation.

Billiard rack devices of the aforesaid nature are generally of complex construction and utilize components susceptible to variable performance or malfunction with long-term use.

It is accordingly an object of the present invention to provide a billiard ball rack of relatively simple, durable construction.

A primary objective of the present invention is therefore to provide an improved billiard ball rack capable of consistently tightly racking a group of billiard balls without being dependent on the racker's manual skills.

Another objective is to provide a billiard ball rack which has few mechanical features capable of failing.

Still another objective is to provide a pool rack which is simple and inexpensive to manufacture and assemble.

A further objective is to provide a pool rack which is easy for unskilled pool players to use.

A still further objective is to provide a pool rack which is lightweight and has minimal external features to facilitate storage

and transportation.

These objects and other objects and advantages of the invention will be apparent from the following description.

5 SUMMARY OF THE INVENTION

The above and other beneficial objects and advantages are accomplished in accordance with the present invention by a billiard ball rack device comprising:

- 10 a) a frame comprised of two straight side walls which converge forwardly at a 60 degree angle to produce a forward apex and extend rearward to divergently separated rear extremities, and a straight back wall which joins said rear extremities in coplanar juxtaposition with said side walls to produce a continuous frame of substantially equilateral triangular shape
- 15 defining an enclosed interior region which accommodates 15 regulation billiard balls in closely packed formation wherein a rearward row of 5 balls is positioned adjacent said back wall,
- 20 b) an elongated flat compression plate disposed against the interiorly directed surface of said back wall and bounded in part by a straight upper edge located above said back wall, and a lower edge pivotably joined to said back wall in a manner permitting forward and downward rotative movement of said compression plate in an arcuate path orthogonal to the
- 25 plane of said frame, and
- c) restoring means interactive between said back wall and compression plate and biasing said compression plate toward

said back wall, whereby

- d) manual pushing force applied to said compression plate causes said compression plate to contact said rearward row of balls with a downward and forward force in a manner which drives all the balls within said interior region toward said apex and into intercontacting relationship.

BRIEF DESCRIPTION OF THE DRAWING

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing forming a part of this specification and in which similar numerals of reference indicate corresponding parts in all the figures of the drawing:

Figure 1 is a perspective top and rear view of an embodiment of the billiard ball rack device of the present invention shown in operative association with billiard balls.

Figure 2 is a top view of the device of Figure 1.

Figure 3 is a rear view of the device of Figure 1.

Figure 4 is an enlarged fragmentary sectional view taken in the direction of the arrows upon the line 4-4 of Figure 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to Figures 1-4, an embodiment of the billiard ball rack device 10 of the present invention is shown comprised of a frame 11 of substantially equilateral triangular shape dimensioned to secure fifteen regulation billiard balls 12.

Frame 11 is comprised of two straight side walls 13 which converge forwardly at a 60 degree angle to produce forward apex 14, and extend rearward to divergently separated rear extremities 15. A straight back wall 16 joins said rear extremities in coplanar juxtaposition with said side walls, forming opposed base apices 17 and producing a continuous frame of substantially equilateral triangular shape. The frame defines an enclosed region 18 which accommodates said fifteen billiard balls in a manner such that a rearward row 19 consisting of five balls is positioned adjacent said back wall.

The frame is of rigid construction, and may be fabricated of wood, plastic or metal. Said side walls and back wall are of equal heights, thereby forming smooth flat upper and lower perimeter surfaces, 20 and 21, respectively. Each wall is bounded in part by interiorly and exteriorly directed vertical surfaces 22 and 23, respectively.

An elongated flat compression plate 24 is disposed against interiorly directed surface 22 of back wall 16. Said compression plate is bounded in part by an upper edge 25 located above upper perimeter surface 20, and lower edge 26 joined to said back wall by pivot means in the form of hinge 27. As best shown in Figure 4, the manner of pivoted joinder of compression plate 24 to back wall 16 is such as to permit forward and downward rotative movement of said plate in an arcuate path orthogonal to the plane of said frame. The height of compression plate 24, measured between said upper and lower edges, is such that when said plate is moved forwardly, as shown in phantom outline in Figure 4, it will contact

the upper portions of the balls of said rearward row. In alternative embodiments, compression plate 24 may be recessed into back wall 16.

Restoring means in the form of paired coil springs 28 are arranged to bias compression plate 24 toward rear wall 16. In alternative embodiments, said restoring means may involve elastomeric structures.

In the operation of the device of this invention, the fifteen billiard balls are placed within enclosed region 18. The device, containing the balls, is then slid upon the surface 32 of the billiards table until forward apex 14 is located above a designated "spotting point" on the table. Compression plate 24 is then pushed forwardly by the opposed thumbs of the person manipulating the device. Such action causes forward and downward force to be applied to the upper regions of the balls in rearward row 19. The consequence of such action is to drive all fifteen balls toward said forward apex in substantially contacting relationship.

The pushing force is then released from said compression plate. A small but significant clearance space 30 is thereby created between the balls of rearward row 19 and interiorly directed surface 22 of back wall 16. The frame can then be lifted without disturbing the compressed array of balls, particularly because the clearance space 30 permits slight forward movement of the frame, thereby avoiding contact with the balls. The width of said clearance space, measured between the interiorly directed surface of said back wall and the nearest point of the forwardly driven balls of rearward row 19, is preferably between $1/4$ and $3/4$

inch. The width of said clearance space, in conjunction with the location of pivoted lower edge 26, is preferably such as to cause said compression plate to contact said balls 19 at an angle of between 60 and 70 degrees with respect to the surface 32 of the
5 billiards table.

While particular examples of the present invention have been shown and described, it is apparent that changes and modifications may be made therein without departing from the invention in its broadest aspects. The aim of the appended claims, therefore, is to
10 cover all such changes and modifications as fall within the true spirit and scope of the invention.